

This negative electrode mixture was applied onto both surfaces of a current collector of a copper foil, dried, rolled, and cut to a prescribed size and welded to a negative electrode lead, thereby to give a negative electrode.

On the other hand, a solution was prepared by dissolving 100 parts by weight of a copolymer of polyethylene glycol diacrylate (average molecular weight: 1,100) and the same modified polyvinylidene fluoride as used in the positive electrode and the negative electrode, which was obtained by the reaction described above, in 100 parts by weight of NMP. In the obtained copolymer, the content of the polyethylene glycol diacrylate portion was controlled to be 8 wt%. Into this solution, 30 parts by weight of a fine powder of silicone dioxide whose surface was made hydrophobic (RX200 manufactured by Nippon Aerosil Co., Ltd.) was dispersed to prepare a paste for the separator layer.

The resultant paste was applied onto both surfaces of the negative electrode and dried to form separator layers of about 15 μm . Then, the positive electrode and the negative electrode were laminated each other and rolled to unify the both electrodes. This was then wound up to have an oblong shape to give an electrode assembly.

The obtained electrode assembly was housed in a battery case composed of a laminate film of aluminum, polyethylene and a modified polypropylene, into which a liquid organic electrolyte was poured. After carrying out pressure-

reducing process for several times, the opening of the battery case was sealed tightly. As the liquid organic electrolyte, a solution prepared by dissolving 1.5 mol/liter of Lithium hexafluorophosphate (LiPF₆) as a solute into a mixed solvent of ethylene carbonate, diethyl carbonate and ethyl methyl carbonate mixed at a volume ratio of 1:1:1 was used. To the liquid organic electrolyte, 0.1 wt%, relative to the copolymer component of the separator layer, of V-65 manufactured by Wako Pure Chemical Industries, Ltd. was added as a polymerization initiator.

Next, the copolymer of the separator layer was crosslinked by heating the battery at 60 °C for 1 hour, thereby to complete the polymer battery.

EXAMPLE 2

A polymer battery was produced in the same manner as in Example 1 except that the content of the polyethylene glycol diacrylate portion in the obtained copolymer was controlled to be 1 wt%.

EXAMPLE 3

A polymer battery was produced in the same manner as in Example 1 except that the content of the polyethylene glycol diacrylate portion in the obtained copolymer was controlled to be 30 wt%.

EXAMPLE 4

A polymer battery was produced in the same manner as in Example 1 except that the average molecular weight of polyethylene glycol diacrylate was changed to 310 and that the content of the polyethylene glycol diacrylate portion in the obtained copolymer was controlled to be 12 wt%.

EXAMPLE 5

A polymer battery was produced in the same manner as in Example 1 except that the average molecular weight of polyethylene glycol diacrylate was changed to 1,600 and that the content of the polyethylene glycol diacrylate portion in the obtained copolymer was controlled to be 8 wt%.

EXAMPLE 6

A polymer battery was produced in the same manner as in Example 1 except that polyethylene glycol dimethacrylate having an average molecular weight of 1,100 was used in place of the polyethylene glycol diacrylate and that the content of the polyethylene glycol dimethacrylate portion in the obtained copolymer was controlled to be 5 wt%.

EXAMPLE 7

A polymer battery was produced in the same manner as in Example 1 except that a modified vinylidene fluoride-hexafluoropropylene copolymer having an oxygen-containing

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